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Agricultural Memorandum No. 417

Respiratory Disease - possible weather factors

L P Smith

Introduction

Dates on which respiratory disease occurred in kittens, were available concerning the Myddelton House colony (Lea Valley) for the period 1967-71.

Climatic data are available from Hoddesdon and Eastwick Lodge, but the relative humidity observations are taken at 0900Z and contain obvious errors.

Humidity data from DWR stations are relatively useless as only dry bulb and dew point are given in whole degrees Celsius - far too coarse a standard of measurement.

Attention was therefore concentrated on days which experienced a pronounced drop in temperature from that experienced the previous day.

Results

It was found that of the 26 outbreaks, the previous fortnight contained days on which significant drops occurred

15 on two occasions
8 on three occasions
2 on one occasion
1 on four occasions

The interval between such 'cold stress' days may be important; the distribution was as follows:

	0	1	2	3	4	5	6	7	8 days
Outbreak to last 'cold stress'	3	3	5	4	2	5	1	3	-
Last to last but one	-	2	-	1	2	6	4	6	3
Last but one to last but two	-	-	-	-	3	3	2	-	1
Last but two to last but three	-	-	-	-	1	-	-	-	-

A tentative hypothesis is therefore a coincidence of infection with a 'cold stress' day plus a further 'cold stress' day after an interval coinciding with an incubation period.

Details are given in the Appendix: no clear evidence of wind force could be found. The 'cold stress' was assessed in three ways

(1) Drop maximum → maximum (day to day change)

(2) Drop maximum → minimum (day to night change)

(3) Drop minimum → minimum (night to night change)

If running 3 day means of the day to night temperature change are calculated, maxima are found at D-4 and D-11 days.

If running 3 day means of pressure are calculated, maxima are found on the same days. Pressure, on average, decreases from D-11 to D-7 and again from D-4 to D day.

Any comment or criticism on this memorandum should be referred to the author.

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APPENDIX

Outbreak date D-day	Last cold stress day				Previous cold stress days			
	Date	Max-Max	Max-Min	Min-Min	Date	Max-Max	Max-Min	Min-Min
Oct 8 1967	D	-1	-16	-5	D-5 D-11	-1 -5	-15 -24	-3 -10
Oct 16 1967	D-4	-3	-12	-10	D-8 D-13	-1 -1	-16 -15	-5 -3
Jan 24 1968	D-1	-2	-10	-6	D-6 D-12	+1 +1	-10 -13	-6 -3
May 18 1968	D-2	-12	-18	-5	D-7 D-12	-3 -1	-14 -22	-2 -8
July 8 1968	D-5	-16	-33	-13	D-6 D-14	-6 -1	-26 -14	-4 -4
Sept 24 1968	D-5	+1	-20	-4	D-13	-14	-20	0
Jan 14 1969	D-5	-2	-17	-12	D-10	-7	-12	-5
Feb 17 1969	D-2	-4	-16	-4	D-9	-4	-19	-15
Mar 26 1969	D-3	-4	-11	0	D-10	-8	-12	-5
May 9 1969	D-5	-3	-26	-4	D-12	-4	-20	-7
June 22 1969	D-3	-1	-21	-9	D-8	0	-32	-2
Sept 6 1969	D-2	-4	-24	0	D-10	0	-13	-4
Nov 4 1969	D	-19	-22	-14	D-5 D-10	-1 +2	-17 -16	-10 -4
Feb 7 1970	D-3	-1	-18	-9	D-10	-10	-20	-4
Mar 11 1970	D-2	-1	-20	-2	D-3	+1	-17	-10
Apr 3 1970	D-3	+12	-16	-9	D-9	-2	-13	-2
Apr 24 1970	D-4	-4	-29	-7	D-10	+3	-20	-6

Outbreak date D-day	Last cold stress day				Previous cold stress days			
	Date	Max-Max	Max-Min	Min-Min	Date	Max-Max	Max-Min	Min-Min
Aug 9 1970	D-1	-4	-17	-1	D-7	0	-30	0
Nov 11 1970	D	-11	-15	-3	D-4 D-8 D-12	-1 -2 -3	-21 -12 -13	-13 -5 -2
Dec 22 1970	D-2	-6	-19	-10	D-9 D-13	-9 +1	-19 -15	-6 -9
Jan 27 1971	D-7	-3	-15	-9				
June 5 1971	D-1	-14	-28	-5	D-8	+4	-18	-12
July 23 1971	D-7	-10	-29	-4	D-10	-3	-29	-13
Aug 8 1971	D-7	0	-22	-9				
Sept 22 1971	D-6	+3	-28	-9	D-12	-4	-24	-7
Oct 18 1971	D-5	-14	-15	-9	D-13	-2	-23	-9